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IRRIGATION in the EAST

IN RECENT years many farmers in the eastern half of the United States have been adopting irrigation to insure an even flow of water to their crops throughout the growing season. Although the number of acres irrigated does not bulk large—except in rice areas—compared with total cropland, it increased steadily through the 1940's.

Enough experimental work has been done to prove that supplemental irrigation will produce large—in some cases phenomenal—increases in yields of crops and pastures. The economic question of whether the increased output will boost farm income enough to justify the higher cost is yet to be decided.

Although the east—the 31 States from Minnesota south through Louisiana to the Atlantic—is a humid area, droughts during the growing seasons not infrequently cause widespread crop damage. Last summer, for example, the drought in the northeast lasted nearly 2 months and is estimated to have cost farmers many millions of dollars.

Even Distribution the Goal

Farmers can use the best seeds, prepare the soil correctly, apply the right amounts of fertilizer at the right time, keep down pests with modern miracle chemicals, and follow all the other up-to-date practices. But none of them will protect crops against irregular or insufficient rainfall. If farmers are to achieve the maximum possible production potential from their land, supplemental water must be available when needed.

Irrigation in the east is not so much a matter of making up for a total shortage of water as in the west, but of making up for poor distribution of water. For many crops, especially vegetables, 1 inch of rainfall each 7 to 10 days is needed for maximum growth. Such an even distribution of rainfall seldom occurs. However, vast untapped sources of ground and surface water supplies can be developed for irrigation.

Awareness of the value of supplemental water on the part of many eastern farmers is shown by the steady gain in the acreage being irrigated. Census figures show that the amount of land being irrigated rose 370,000 acres, or 50 percent from 1940 to 1945. About two-thirds of this increase occurred in rice areas of Arkansas and Louisiana. However, the irrigated acreage of other crops rose at a much faster rate during this period.

Increase Has Continued

Recent information indicates that the rate of increase has been stepped up since 1945. Areas in which only a few hundred acres of specialty crops were being irrigated a few years ago now have thousands of acres under irrigation covering many different kinds of crops. The total amount of land now being irrigated in the East probably exceeds 1½ million acres with about a million acres of it in rice.

Except for the rice areas, irrigation in the East has been developed by individual farmers. Guided largely by successful "pioneer" irrigators, farm operators—particularly fruit and vegetable growers—have developed irrigation farming on what appears to be a sound basis for this humid area.

Group Projects Ahead

Although irrigation in the East has been an individual matter so far, some large group projects are being considered.

Uncertainty about water supplies for existing irrigations in some areas has raised questions on the need for storage facilities and improved water-right regulation. In the coastal areas where drainage problems have been solved by group effort, farmers see great possibilities for dovetailing drainage and irrigation.

In the not-too-distant future, we may see some relatively large irrigation developments as a part of multipurpose projects for large river basins. The Corps of Engineers of the United States Army has incorporated a relatively large supplemental irrigation development in a proposed project covering a rice area in the Grand Prairie region of Arkansas. If carried out, the project would insure an adequate supply of water for around 190,000 acres.

Few Large Projects Seen

The central and southern Florida comprehensive project, the first phase of which has been authorized by Congress, will provide drainage and would supply enough water to irrigate 2,300,000 acres if completed as now planned by the Corps of Engineers. In addition, a few local soil-conservation districts in the East have considered joint development of irrigation.

Generally speaking, though, large-scale community development of irrigation in the East lies far in the future when the needs of the Nation for farm products are much greater than now.

For the next several years, several factors will tend to keep eastern irrigation developments relatively small. In the first place, a tremendous expansion can be brought about without large works. In the second place, irrigation in the east is used to supplement rainfall with a small amount of water. The east will never need the huge storage capacities that are required in the west. A final factor is the lack of State and Federal governmental programs to promote and provide financial backing for large developments.

The role irrigation ultimately will play in the east is not yet clear. Fourteen State agricultural experiment stations in the east have carried on some research on supplemental irrigation. These experiments have not been run long enough to give conclusive results. For one thing, eastern farmers depend very much on the use of fertilizer. Just how much can be done with a combination of fertilizer, the addition of humus and supplemental irrigation remains largely to be proved.

However, results from these experiments so far indicate a considerable promise for a wide range of crops. The possible benefits of irrigation are many—increased and dependable yields, improved quality of product, earlier maturity of crops, prolonged bearing period, reduced damage from infestation of certain insects, production of a second crop in late summer and fall, regulated maturity of berry and vegetable crops to take advantage of off-season markets, increased efficiency in fertilizer applications, greater diversification of farm enterprises.

In some areas, irrigation also has a part to play in reducing soil erosion by aiding quick germination and initial growth of fall-seeded winter cover crops needed to retard run-off.

Costs Are High

A major economic problem must be overcome if irrigation is to expand much in the east in coming years. In this area, natural rainfall normally will produce acceptable yields. Irrigation is not essential for crop production as it is in the arid parts of the west. The farmer who puts in an irrigation system in a humid area is gambling on higher stakes. The cost is rather high and might be burdensome in years when prices are low. Conditions favor the installation of portable-pipe sprinkler systems which are generally more expensive than ditch irrigation. The margin of profit on such a system is likely to be rather narrow.

On many farms, however, the benefits are likely to outweigh the disadvantages. This means that irrigation in the east is likely to continue to expand as long as the demand for farm products remains strong.

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From Wheat . . . to Grass

A GOOD many Great Plains wheat growers who are faced with the prospect of cutting down on their wheat acreage are wondering whether to return some of their cropland to grass. In this subhumid region, the alternatives to wheat have not been many; they included mainly summer fallow, grain sorghums, forage sorghum, barley, and grass.

Both the experience of farmers and scientific experiments show that grass is a profitable alternative to wheat on many farms. Furthermore, it has been shown that reseeding is a much better method of getting land back into grass than natural revegetation.

Reseeded Pastures Better

When approved methods are followed in reseeding grass and the weather is not too unfavorable, the chances of obtaining a stand are good. Once established, experimental studies indicate that revegetated pastures will carry more animals per acre than native ranges equally well managed. Reseeded pastures at the Southern Great Plains Field Station at Woodward, Okla., have produced from two to three times the pounds of beef per acre obtained with the same system of management on virgin sod.

A field of sand love grass at Woodward produced 117 pounds of beef per acre compared with 36 pounds on native range. A mixture of grasses produced 93 pounds of beef per acre compared with 39 pounds on native pasture. At Briggsdale, Colo., 1,200 acres of crested wheat grass seeded on abandoned fields supported 125 cattle for 2 months. If it had not been reseeded it would have carried only about 20 head for the same period.

Over a 10-year period at the Moccasin Branch of the Montana Agricultural Experiment Station, crested wheat grass has produced 79 pounds of beef per acre, brome grass, 54, and native pasture only 37.

Costs Vary

If cropland is to be returned to grass, reseeding will shorten the process by many years. In the central and southern Great Plains, a long period of years usually is required to obtain a complete cover of desirable grasses by natural revegetation. On reseeded land, optimum density of cover may be reached in about 4 to 6 years, with average weather and a properly prepared seedbed. Some grazing might be possible beginning late in the second year.

The costs of establishing a stand of grass depend largely on the method of preparing seedbed and varieties of grass used.

In western Kansas, a common method of preparing land for grass seeding is to drill a sorghum crop late the preceding year, graze it lightly and drill grass seed into the stubble the next spring. A grass mixture often used is 2 pounds of buffalo and 6 pounds of blue grama per acre. Buffalo grass seed now costs about 90 cents, and blue grama about 35 cents, a pound.

An Approved Practice

Cash costs for raising the sorghum cover crop, seeding the above grass mixture, and mowing weeds during the following year would run about 8 or 9 dollars an acre. Costs of grass and sorghum seed are included as well as taxes, labor, gasoline, oil, and repairs for equipment used. The loss of use of the land while a stand is becoming established would be an additional cost, if there is an alternative use for the land.

Establishing a stand of grass on cropland is an approved PMA conserva-

tion practice. For seedings that qualify, a part of the cost can be offset by practice payments.

A recent study of BAE examines the possibilities of increasing the acreage of grass on wheat-beef ranches. The study includes a typical 1,360 acre ranch in southwestern North Dakota which had 600 acres in native pasture, 300 in wild hay, 400 in crops and fallow and permits for 1,080 animal unit months of grazing on public lands. With average weather, this ranch would support a cow herd of 92 head on a cow-yearling basis. With 1925–29 prices, a period when farm prices were at about 90 percent of parity, and with average crop and livestock production, net cash income on this ranch would average a little under $4,000 a year.

This operator has already shifted 90 acres of his wheat into crested wheat grass. This shift raised net farm income a little. A further increase of grass acreage to completely eliminate wheat would not have changed income very much. But, because the seeded grass could not be grazed immediately, there would be a temporary drop in income for about 3 years while the grass is becoming established.

More Stable Income

An examination of year-to-year results, using actual prices and yields for each year from 1929 to 1942 indicates that the livestock program without any wheat would have returned a more stable income during the drought and depression years than the former system.

The adjustment this rancher already has made in shifting about one-third of his less productive wheatland into grass has resulted in greater stability of feed production and a better distribution of labor. However, this is an area in which wheat farmers are familiar with livestock. They have equipment, and a water supply. They produce feed grains and forage crops to use with grass and they have a large enough business to support fairly large livestock enterprises.

The same adjustment might not be so easily made in areas of specialized wheat production, where livestock enterprises tend to be small and many wheat farmers do not have facilities for the care of livestock.

Preliminary analyses indicate that on these smaller farms, profitable opportunities include production of feed grains for hogs, or of grains and roughages for cattle feeding. Grass seedings on these farms would be chiefly for the purpose of stabilizing low-quality cropland.

Better for Larger Farms

On larger farms, especially those which already have access to some native grass, or with sufficient excess wheat acreage to warrant the establishment of a grazing enterprise, more emphasis can be placed on the regrassing of cropland. Expanded acreages of grass, forage crops and feed grains would fit in with either a deferred feeding program or the keeping of a beef herd and production of either feeder or slaughter calves.

Wheat farmers should consider the place of grass on their own farms. It is certainly the best use for cropland subject to severe wind or water erosion. On many farms it may have a place on cropland of moderate to good quality as well. This is most likely to be so on farms that already are equipped with fences, water, and livestock shelter, operated by farmers skilled in handling livestock.

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MACHINES TAKING OVER ON

Colorado Sugar Beet Farms

MECHANIZATION of sugar beet growing has occurred at a slower pace than for most other farm crops. However, considerable progress is being made and it seems reasonable to expect that before many years most operations on most farms are likely to be done by machine.

The economics of sugar beet mechanization on Colorado farms has been studied by the Colorado Agricultural Experiment Station and the Bureau of Agricultural Economics under the Research and Marketing Act as a part of a broader study in this field. Interviews with over 100 farmers in Weld County during 1947 and 1948 provided information for comparing hand and machine methods.

Substitution of tractors and trucks for horse-drawn equipment was the first step taken in the mechanization of sugar beet growing. By 1946 all of the farmers interviewed during this study had tractors and two out of three owned trucks. Land preparation, planting and cultivating, including ditching for irrigation, are now almost exclusively done with tractor drawn equipment. However, it is only in recent years when labor has been scarce and wage rates high that farmers have begun using power equipment for other field work.

Big Labor User

Blocking, thinning, and weeding sugar beets use the most labor of any of the preharvest operations. On the Colorado farms, they took about 30 man-hours per acre, or about 70 percent of all labor used up to harvest time.

In blocking and thinning by hand, workers go down the row, usually on their knees, and clean out segments or "blocks" with a short-handled hoe to space out the beet plants properly. At the same time they thin the beets and pull the weeds in the blocks. This operation usually takes about 20 man-hours per acre.

Three to four weeks after the beets have been blocked and thinned, they are hoed by hand. A second hoeing or weeding follows about 3 weeks later. Each hoeing requires about 6 hours of labor per acre.

Several machines for blocking and thinning sugar beets are on the market and others are being developed. Those now used are of two types—down-the-row and across-the-row machines. Most of them are mounted on tractors and regulated by hydraulic lifts. Some mechanical weeding also is done by a weeder-mulcher or finger weeder. After the machines have gone over the field, a hand blocking and thinning operation still is required, but it can be done much more quickly and easily when preceded by a machine.

Machines Do Job Faster

The few farmers interviewed who used mechanical blockers in 1947 and 1948 were able to mechanically block an acre of beets with only 0.6 man-hours of labor. Hand blocking and thinning required an additional 11.3 man-hours per acre. Thus, the combination of machine blocking and hand blocking and thinning saved 9.3 hours of labor per acre, or 45 percent, over hand methods. In addition, mechanical blocking can be done much faster than the hand operation. In 1947 when wet weather prevented workers from getting into the fields until late in the spring, mechanical blockers enabled farmers to save fields of beets that otherwise would have been lost entirely.

On the other hand, mechanical blocking and thinning has not yet been developed so that it is suitable for all conditions encountered by beet growers. In the spring of 1948, for example, a number of farmers who had planned to use mechanical blockers were unable to do so because of poor, uneven stands of beets resulting from dry weather and poor germination. Improved planters and seed that would assure more uniform stands would do

much to aid mechanization of these operations. Despite these handicaps, however, more and more farmers are finding mechanical blocking and thinning advantageous.

Fifth Have Harvest Machines

Mechanical harvesters have been adopted more rapidly than machine blockers. By the end of 1943, more than a fifth of these farms had used mechanical harvesters and 18 percent of the beet acreage was harvested mechanically. However, most beets continue to be harvested by the "hand-topping" method. In this operation, the tap root of the beet is broken and the beet loosened with a mechanical lifter. The beets then are pulled from the ground by hand and piled in windrows, after which they are topped by hand and windrowed for loading with the mechanical loader. These operations required 1.55 man-hours per ton of beets harvested.

Three types of mechanical harvesters were used on these farms—a "trailer," a "windrow," and a "pull" type. All of them were one-row, tractor-powered machines.

Compared with the average hand topping crew, mechanical beet harvesters harvested 25 percent larger acreage per day, used about one-half as many workers and operated as favorably under variable weather. Costs of harvesting and loading 1 ton of beets averaged $1.03 compared with $1 93 for hand-topping methods. There was little difference in the harvesting costs of the three types of harvesters.

Mechanical harvesters have proved successful in Colorado and will be more widely adopted. Whether it will pay an individual farmer to buy a harvesting machine, however, depends on such factors as the acreage of beets to be harvested, the relative costs of the machine and of contract wage rates, the yield of beets harvested and the length of life of the harvester. The study showed that machine harvesting costs per ton decline as the yield increases. For any given yield, the cost also declines as the acreage harvested increases.

With the cost rates of 1947–48 and assuming the life of the machine at 10 years, a farmer with 20 or more acres of 13 ton beets could harvest them cheapest mechanically. If the life of the machine is assumed to be only 5 years, the farmer would need at least 26 or 27 acres of 13 ton beets before mechanical harvesting would pay.

More widespread adoption of mechanical harvesting will result in many changes on sugar beet farms. One of the first effects is that a larger part of itinerant farm workers will be forced to find jobs elsewhere. This will tend to increase the rate of mechanization and might result in a greater concentration of sugar beet production on larger farms, or in larger acreages per farm.

The reduction in the labor supply for harvesting beets also would reduce the number of workers available for blocking, thinning, hoeing, and weeding in the spring. This may stimulate mechanization of these operations. Fewer workers also would be available for harvesting potatoes which are grown on many beet farms. As a result, the acreage of potatoes may be reduced or mechanization of the potato harvest increased.

Interest in Pasture Growing

Another development that is occurring along with mechanization of sugar-beet growing holds considerable promise for the future—this is the increasing interest in irrigated pasture. A shift in part of the acreage from cash-crop production to irrigated pasture would enable sugar-beet farmers to have livestock the year around instead of only during the winter as is common now. It also would permit a larger part of the crop residues, stubble, and other waste from cash crops to be used for livestock feed.

These two developments—sugar-beet mechanization and irrigated pasture—should make it possible for the first time in history for sugar-beet producers to develop a farm program which would give year-around employment to a few workers instead of seasonal employment for many.

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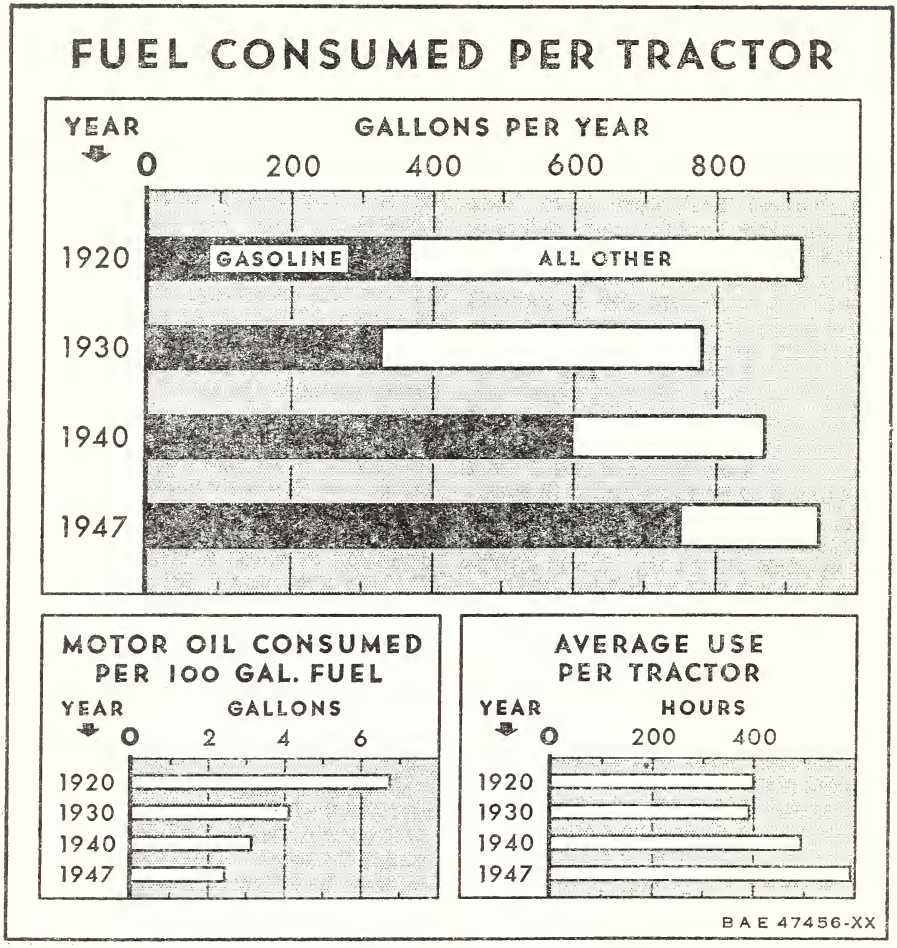

Tractors Burn Less Fuel per Hour but Use More per Year

FARMERS have been buying more tractors in recent years than ever before but the total number of hours the machines are used each year has increased even more. As a result, the average annual fuel consumption per tractor has risen to new highs even though average consumption per hour has declined.

For example, farm tractors were used an average of 592 hours each in 1947 according to information supplied by voluntary crop reporters of the United States Department of Agriculture. This was about 100 hours more than the average for 1940 and almost 200 hours or 50 percent more than the averages for 1920 or 1930. In 1947, an average of 946 gallons of fuel was consumed per tractor while the average amount used per hour was 1.6 gallons. In 1940, consumption per tractor per

year averaged 869 gallons and average consumption per hour 1.8 gallons.

A tremendous increase in the use of tractor power for light duty jobs and the fact that the modern tractor can be used with many more machines accounts for the increase in average annual use per tractor. The gain occurred despite the fact that many tractors bought in recent years were for farms below average in size. Furthermore, garden tractors, which are used far less annually than other types, now make up a higher percentage of farm tractors than ever before.

Crawlers Used Most Per Year

Annual use varies widely by types of tractors. In 1947, crawler tractors were used an average of about 660 hours, factory-made wheel tractors 634 hours, home-made tractors about 190 hours and garden tractors about 120 hours. At the beginning of 1948, factory-made wheel tractors made up about 88 percent of all tractors, crawler tractors about 4 percent, home-made tractors about 2 percent, and garden tractors about 6 percent.

The large wheel and crawler-type tractors are used more hours per year than smaller machines. Tractors also are used more hours on larger farms than on smaller. In general, annual use has decreased as the tractor age has increased. Old tractors often are found on farms that have one or more newer tractors. Under these conditions, the old tractor often is sparingly used, principally during rush seasons. Old tractors frequently are bought by operators of small farms who have less tractor work to do than operators of larger farms.

Gasoline has increased in importance as a tractor fuel. Almost 80 percent of the fuel used in 1947 was gasoline. Distillate made up 6 percent, Diesel fuel 4 percent, kerosene 3 percent, and all other fuels 7 percent. Gasoline made up 40 percent of all tractor fuel in 1920 and 69 percent in 1940. Most of the tractors made in recent years have been equipped with high-compression motors and are adapted for use with gasoline. Also, many motors of old-model tractors have been converted to high-compression motors.

More Wheel Tractors Use Gas

The kind of fuel varies with the kinds of tractors. Garden and home-made tractors used gasoline almost exclusively. For the important factory-made wheel-type tractors, about 82 percent of the fuel was gasoline, but more than half of the fuel used in crawler tractors in 1947 was Diesel fuel. The kind of fuel also varies with the age of the tractor. Old-wheel tractors use relatively less gasoline than the new, while new crawler tractors use Diesel fuel to a much greater extent than do the old ones.

The kind of fuel used in tractors varies in different States and is influenced by State taxes, rebates on gasoline taxes, and by kind of tractor. In Louisiana, Arkansas, Nebraska, and Tennessee, less than 40 percent of the tractor fuel used in 1947 was gasoline. In Ohio and the northeastern States, however, gasoline accounted for 90 percent or more of all tractor fuel.

Oil Use Off Sharply

Since 1920, consumption of motor oil per 100 gallons of tractor fuel has declined drastically. In 1947, tractors used only 36 percent as much oil per 100 gallons of tractor fuel as in 1920. Increased use of gasoline, improved motors, increased use of filters and other factors have accounted for the decline.

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Safflower Winning a Place

ON MANY PLAINS FARMS

FARMERS in the western Great Plains have long felt the need for a suitable crop to include in their rotations. The need is becoming greater now that wheat acreage allotments are back and the long-time outlook indicating that further reductions are ahead.

Safflower now may be added to the list of crops that can be grown on the Great Plains. Commercial production of this oil crop has been small so far but safflower shows promise of winning a permanent place on many Plains farms.

Safflower has been grown in the United States since 1925 but it has remained virtually unknown until the recent development of improved varieties began to generate widespread interest. Safflower seed yields an oil with drying characteristics similar to linseed oil and a protein press-cake or meal suitable for livestock feed. The oil is also edible.

Although safflower has been cultivated for several thousand years in India, Iran, and Egypt, it has remained of minor importance. The reasons are not hard to find. Safflower is a coarse, thistlelike plant so spiny that it is both difficult and painful to cultivate and harvest by the crude hand methods used in most parts of the world. Moreover, both the oil content of the seed and the yield have been low in foreign countries.

Many Problems Eliminated

Inefficient methods of extracting the oil also have dimmed interest in safflower. The relatively large proportion of hull absorbed so much of the oil that the quantity recovered was too small to make production practical.

Modern planting and harvesting machines, improved methods of extracting the oil and improved varieties have eliminated many old problems. Safflower is planted with an ordinary grain drill, either solid or in rows. Wheat combines with only minor adjustments can be used to harvest the crop.

Oil content of the safflower seed recently has been increased about 50 percent over earlier varieties through the work of the University of Nebraska. One available variety, certified N–852, has an average oil content of 32 percent, and higher yielding varieties are almost ready for release. Some nearly spineless varieties also have been developed. Methods of extracting the oil have been improved, and several plants are processing seed from the 1949 crop. One plant processes safflower seed only.

Adapted to Semiarid Regions

Safflower grows well in the semiarid area of the western Great Plains, where wheat is the principal crop. It is poorly adapted to the more humid regions. Under dry-land farming conditions, yields on nonfallowed land range generally between 350 and 750 pounds. Yields on fallow range from 750 to 1,200 pounds per acre. On irrigated land of average fertility, safflower yields of 1,750 to 2,750 pounds per acre are obtainable with two or three irrigations.

Mr. A. H. Rehbein, a Montana farmer who has raised safflower for more than 20 years, writes: "During all the years we had only one crop failure and that was . . . when the grasshoppers swarmed in and . . . devoured the safflower. We had a 46-acre field of safflower that was eaten by the hoppers in about 3½ hours . . . We never raised less than 10 bushels per acre. The highest yield, under dry-land conditions, was 40 bushels per acre. Under irrigation yields of 72 bushels were obtained." (A bushel is 40 pounds or more.) One Nebraska farmer had a field of safflower invaded by livestock, later hailed, and finally covered with 4 inches of snow before he could harvest it. The crop still made 350 pounds per acre.

The cost of producing safflower approximates that of wheat since the same planting and harvesting machines can be used for both crops. Be-

cause safflower is planted at different times than wheat, and harvested after wheat in the fall the farmer can utilize his machines more fully and more evenly distribute his time.

A Livestock Feed

Another important consideration is that the meal provides a protein supplement for livestock in areas which heretofore have had to ship in meal at considerable expense from hundreds of miles away. Experiments indicate that safflower meal is comparable in feeding value to soybean meal when fed on an equal protein basis. When oil is extracted without removing the hulls, protein content of the oil seed cake from varieties now being recommended ranges up to 25 percent.

Seed prices in future years will be influenced largely by the price of oil. Safflower oil from the 1949 crop is being sold at prices below linseed, but substantially above soybean oil. Colorado farmers, for example, are receiving 4 cents per pound for stock seed for crushing. At this rate, farmers' average gross return is $30 per acre on dry land and $80 per acre under irrigation. Comparison with other crops that require the same machinery or cultural practices is shown in the table below.

Since the present price is largely introductory, it is difficult to predict the prices future production will bring. Whatever the eventual relationship to linseed oil prices, it appears that safflower oil will find a ready market at prices higher than for soybean oil.

Over 8,000,000 pounds of oil are expected to be produced from the 1949 safflower crop, or about 1 percent of the linseed oil production. Much of the commercial acreage in 1949 was grown in Colorado and the Nebraska panhandle. Smaller acreages were grown in southeastern Wyoming, eastern Montana, and in the Great Falls area of Montana.

Safflower acreage in 1950 is expected to more than double that of 1949 crop. Expansion of existing processing facilities and the erection of one or more additional plants is planned. In California, commercial scale production will be attained in 1950 for the first time. Several oil companies, seeking to supplement their present oilseed sources, are arranging to contract for thousands of acres of safflower. Interest among individual California farmers also is strong and a number have visited the Colorado-Nebraska area to observe the crop and to buy certified or proved seed.

Nearby Plants Needed

Farmers in Washington, Oregon, and Idaho have grown safflower quite successfully in recent years, but the absence of nearby processing plants has made it difficult to sell seed except in distant markets. Low prices were paid for seed, not only because of the distance, but also because few processors had experience prodessing the seed. The large proportion of hulls make it necessary to process safflower seed near the producing area for farmers to receive maximum prices.

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Gross Returns Per Acre in Colorado, 1949

Crop	Yield per acre		Prices [1] received by farmers	Gross return per acre	
	Dry land	Irrigation		Dry land	Irrigation
			Dollars	*Dollars*	*Dollars*
Safflower ---------- pounds	750	2, 000	0. 04	30. C0	80. 00
Spring wheat ---------- bushels	20	32	1. 82	35. 40	58. 24
Barley ---------- do	25	40	. 86	21. 50	34. 40
Beans ---------- pounds	400	1, 5C0	. 06	24. 00	90. 00

[1] Prices are as at mid-September 1949.

THE FATS AND OILS MARKET

THE MARKET for nonfood fats and oils depends chiefly on whether American business is very active, or relatively quiet. Moreover, there is evidence that people eat somewhat more fats and oils (other than butter) with increasing incomes, until about the middle-income level. Beyond that, per person consumption of all fats and oils (other than butter) tends to level off and even decline. It seems likely, too, that people eat about the same quantity of fats and oils (other than butter) from one year to the next, whether the price is high or low.

These are tentative conclusions drawn from a report on "Factors Affecting Consumption of Fats and Oils Other Than Butter, in the United States," covering the interwar period, 1922–40 and published in the magazine "Agricultural Economics Research."

An Outlook Tool

This study and others related to it are being made by the Bureau of Agricultural Economics with funds authorized by the Research and Marketing Act. Their main goal is to give economists better tools for forecasting the demand for and probable prices of oilseeds and fats and oils. Such outlook statements are used by farmers in planning their production and marketings, and by many businessmen in planning their own activities.

Results of this particular study are stated in technical form, of interest chiefly to economists, since it was intended to give them a general mathematical guide to the relationships between consumption of these products and industrial production, prices, and general trend factors.

Considerable substitution is possible among the various fats and oils used industrially, and among the various fats and oils used as food. If the price of one of these fats or oils is comparatively high at a particular time, buyers may shift to another one for which the price is lower. This makes it desirable to examine supplies of and demand for all fats and oils as a group, as well as for the major ones individually.

Most food fats and oils other than butter and margarine are used in cooking or other ways that make their cost a relatively small part of the total cost of the food. Therefore, a boost or a cut in the prices of these fats and oils probably does not result in much change in the quantities consumed.

Long-Term Trends

The changes that do come are more of a long-time matter resulting from changes in the way that food is prepared. For example, commercial bakers used about 2 percent as much fat as the quantity of flour they used in baking bread, during the early 1920's. By 1940, they had raised the quantity of fat to about 3 percent as much as the flour. This was a small increase compared with the total ingredients of the bread, but a 50-percent increase in the fat alone.

More recently, hearings before the Food and Drug Administration have centered attention on the growing use of chemical bread softeners which, it is claimed, produce the same shortening effect in baked goods as several times their weight in fat and also keep the bread from drying out so fast on the shelves. A leading type of softener is made in part from petroleum and in part from fats. If this softener were to be widely used as a substitute for fats, it would cut heavily into the market for lard and shortening.

Little Price Effect

The total use of nonfood fats and oils is not particulary affected by price changes. When construction and other industrial activities are booming, more paint and varnish are used—and this means a better market for fats and oils. There is also an increase in the use of fats and oils in other nonfood products.

Here too, there are some long-run developments worth examining. Dur-

ing the 20 years just before 1940, more and more families bought washing machines—and bought flaked and granulated laundry soaps instead of the laundry bars they had used to scrub clothes on the old washboard. The flaked and granulated soaps contain considerably more fat than the bar.

On the other hand, synthetic detergents became popular around the house, during the war; and by last year it looked as though they had taken over some 15 to 25 percent of the total market for "synthetics" and soap. Some of the synthetic detergents contain some fat products, but the bulk of the detergents used do not.

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Outlook Highlights

. . . JANUARY 1950

Industrial Activity Picks Up

As 1949 passed into history, the Nation's industrial machine was in high gear and gaining speed. To farmers, this was showing up in a continued high demand for agricultural products.

Industrial production has recovered rapidly from the fall drop when work stoppages in coal and steel reduced the over-all output. Along with the upswing in industry, nonagricultural employment rose in November to the highest level in 1949 while the number of unemployed declined.

The boom in the construction industry and a strong market for automobiles have been major supports for postwar prosperity; will continue so in 1950. Private and public construction probably set a new record in 1949 and no slackening of any consequence is in sight for this year. Sales of automobiles are expected to continue at a high rate through at least the first half of 1950.

Chief sign of economic weakness in view for 1950 is a gradual falling off in the amount of money businessmen spend for plant and equipment. In the first quarter of 1950, these expenditures are expected to be about 14 percent below a year earlier. Balancing out the prospects, though, indicates high-level activity will continue for several months.

Farmers' Prices Steady

Prices farmers receive again dropped slightly from mid-November to mid-December the average of prices paid by farmers, including interest and taxes, on the other hand, has been steady for 3 months. As the result, the parity ratio dipped below parity in mid-December for the first time in 8 years.

With the market for farm products continuing strong and price-support programs bolstering many commodities, farmers' prices probably will average close to December levels for the next few months.

Bigger Pig Crop This Spring

More than 62 million pigs may be produced in the spring of 1950. According to the intentions of producers on December 1, 9.8 million sows will farrow pigs from December 1949 through May 1950, 7 percent more than a year earlier. If litters equal the average of the last few years, the crop would easily top the 60-million mark.

If the fall crop is up in proportion to the spring crop, over 100 million pigs would be produced in 1950. This number has never been exceeded in peacetime and only twice in wartime.

Larger pig crops in 1949 and the spring of 1950 will boost pork production well above last year. Consumption per person may be a record for a peacetime year.

Hog prices will begin their seasonal increase soon but are not likely to increase as fast as prices for corn this

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Newell Succeeds Callander as Crop Board Head

W. F. Callander, chairman of the United States Crop Reporting Board for nearly a quarter century and one of the country's best known agricultural statisticians, retired on December 31. S. R. Newell, who for several years has been deputy assistant administrator for marketing in the Production and Marketing Administration, has been appointed by Secretary Charles F. Brannan to succeed Callander.

Mr. Callander, reared on a Canadian dairy farm, rose from clerk to chairman of the Crop Reporting Board and assistant chief of the Bureau of Agricultural Economics in his 45 years of Government service. Except for three short periods when he was assigned to other duties, Mr. Callander has been in charge of the Department of Agriculture's crop and livestock estimating work since 1922. In addition to his work in this country, he has assisted several foreign countries, at their request, in organizing their crop and livestock reporting work.

Mr. Newell has long been connected with agricultural estimating work. In 1926, he was appointed assistant crop statistician in charge of farm prices. Later, he served successively as agricultural statistician in charge of crop reporting in Maryland and Delaware, and as a member of the Crop Reporting Board in charge of fruit crops. He became assistant to the chief of the newly established Agricultural Marketing Service in 1940, with general supervision over marketing activities, including supervision over the crop reporting and agricultural estimating work until it was returned to BAE in 1942.

Prices of Farm Products

[Estimates of average prices received by farmers at local farm markets based on reports to the Bureau of Agricultural Economics. Average of reports covering the United States weighted according to relative importance of district and State]

Commodity	5-year average		Dec. 15 1948	Nov. 15, 1949	Dec. 15, 1949	Parity price Dec. 15, 1949
	August 1909–July 1914	January 1935–December 1939				
Wheat (bushel)—dollars	0.884	0.837	2.05	1.90	1.93	2.12
Rye (bushel)—do	.720	.554	1.47	1.25	1.26	1.73
Rice (bushel)—do	.813	.742	[1] 2.41	1.86	1.94	1.95
Corn (bushel)—do	.642	.691	1.23	1.02	1.13	1.54
Oats (bushel)—do	.399	.349	.765	.664	.699	.958
Barley (bushel)—do	.619	.533	1.13	1.10	1.09	1.49
Sorghum grain (100 pounds)—do	1.21	1.17	2.19	1.66	1.79	2.90
Hay, baled (ton)—do	[2]	11.20	23.80	21.50	21.90	
Cotton (pound)—cents	12.4	10.34	[1] 29.64	27.76	26.50	29.76
Cottonseed (ton)—dollars	22.55	27.52	68.80	42.30	43.30	54.10
Soybeans (bushel)—do	[3] .96	.954	2.36	1.95	2.09	[4] 2.30
Peanuts (pound)—cents	4.8	3.55	10.5	10.4	10.4	11.5
Flaxseed (bushel)—dollars	1.69	1.69	5.75	3.57	3.53	4.06
Potatoes (bushel)—do	[5] .697	.717	1.54	1.34	1.31	1.77
Sweetpotatoes (bushel)—do	.878	.897	2.19	1.89	2.02	2.11
Apples (bushel)—do	.96	.90	[1] 2.53	1.43	1.59	2.30
Oranges on tree (box)—do	[6] 2.29	1.11	.99	1.34	1.23	3.62
Hogs (hundredweight)—do	7.27	8.38	20.90	15.60	14.80	17.40
Beef cattle (hundredweight)—do	5.42	6.56	20.40	19.20	19.00	13.00
Veal calves (hundredweight)—do	6.75	7.80	24.10	22.00	22.40	16.20
Lambs (hundredweight)—do	5.88	7.79	21.80	21.40	21.00	14.10
Butterfat (pound)—cents	26.3	29.1	65.7	62.6	63.3	63.1
Milk, wholesale (100 pounds)—dollars	1.60	1.81	[1] 4.79	4.25	[7] 4.23	3.84
Chickens (pound)—cents	11.4	14.9	30.7	23.1	22.3	27.4
Eggs (dozen)—do	21.5	21.7	52.8	47.1	40.5	51.6
Wool (pound)—do	18.3	23.8	48.9	46.0	46.7	43.9

[1] Revised.
[2] Prices not available during base period.
[3] Comparable base price, August 1909–July 1914.
[4] Comparable price computed under the Steagall amendment.
[5] 1919–28 average of $1.12 per bushel used in computing parity.
[6] 1919–28 average for computing parity price.
[7] Preliminary.

Year and month	Industrial production (1935–39=100)[1]	Total income of industrial workers (1935–39=100)[2]	1910–14=100					Index of prices received by farmers (August 1909–July 1914=100)			
			Average earnings of factory workers per worker	Wholesale prices of all commodities[3]	Prices paid by farmers		Farm wage rates[4]	Livestock and products			
					Commodities	Commodities, interest, and taxes		Dairy products	Poultry and eggs	Meat animals	All livestock
1910–14 average	58	50	100	100	100	100	100	100	101	101	101
1915–19 average	72	90	152	158	151	150	148	148	154	163	158
1920–24 average	75	122	221	160	161	173	[5] 182	159	163	123	142
1925–29 average	98	129	232	143	155	168	[5] 185	160	155	148	154
1930–34 average	74	78	179	107	122	135	[5] 119	105	94	85	93
1935–39 average	100	100	199	118	125	128	[5] 124	119	109	119	117
1940–44 average	192	238	[5] 315	139	150	147	[5] 220	162	146	171	164
1945 average	203	291	[5] 389	154	180	172	[5] 366	197	196	210	203
1946 average	170	275	[5] 382	177	202	193	[5] 399	242	198	256	240
1947 average	187	332	[5] 436	222	246	231	[5] 424	269	221	340	293
1948 average	192	364	[5] 472	241	[5] 262	[5] 248	[5] 445	297	236	371	320
1948											
December	192	374	493	237	[5] 260	[5] 246	----	283	260	339	305
1949											
January	191	362	[5] 484	234	[5] 258	[5] 246	[5] 440	275	240	330	295
February	189	354	[5] 481	231	[5] 256	[5] 244	----	264	218	315	280
March	184	346	[5] 477	231	[5] 256	[5] 244	----	254	217	335	287
April	179	340	[5] 469	229	[5] 257	[5] 245	[5] 416	240	221	333	282
May	174	332	[5] 472	227	[5] 256	[5] 244	----	234	217	328	277
June	169	----	[5] 475	226	[5] 255	[5] 243	----	230	213	331	277
July	161	----	[5] 476	224	[5] 255	[5] 243	[5] 429	236	214	324	275
August	170	----	[5] 476	223	[5] 253	[5] 242	----	243	226	317	276
September	174	----	[5] 485	224	[5] 251	[5] 240	----	249	237	326	284
October	[6] 166	----	----	222	[5] 250	[5] 239	[5] 414	255	231	308	276
November	----	----	----	221	[5] 250	[5] 239	----	258	217	295	268
December	----	----	----	----	[5] 251	[5] 240	----	259	195	289	261

Year and month	Index of prices received by farmers (August 1909–July 1914=100)									Parity ratio[7]
	Crops								All crops and livestock	
	Food grains	Feed grains and hay	Tobacco	Cotton	Oil-bearing crops	Fruit	Truck crops	All crops		
1910–14 average	100	101	102	96	98	99	----	99	100	100
1915–19 average	193	164	187	168	187	125	----	168	162	106
1920–24 average	147	126	192	189	149	148	[8] 143	160	151	86
1925–29 average	140	119	172	145	129	141	140	143	149	89
1930–34 average	70	76	119	74	72	94	106	86	90	66
1935–39 average	94	95	175	83	106	83	102	97	107	84
1940–44 average	123	119	245	131	159	133	172	143	154	103
1945 average	172	161	366	171	215	220	224	201	202	117
1946 average	201	195	382	223	244	226	204	226	233	121
1947 average	271	246	380	261	335	194	249	261	278	120
1948 average	250	249	387	259	326	157	238	250	287	[5] 116
1948										
December	236	184	415	239	283	164	209	228	268	[5] 109
1949										
January	232	187	412	236	274	180	282	238	268	[5] 109
February	221	173	412	235	244	181	285	233	258	[5] 106
March	224	178	411	232	242	189	263	232	261	[5] 107
April	227	178	410	241	238	207	236	236	260	106
May	227	174	411	242	231	215	213	234	256	[5] 105
June	212	168	412	243	219	211	175	225	252	[5] 104
July	207	171	412	243	205	194	185	220	249	102
August	204	166	407	236	225	160	174	212	245	101
September	210	167	460	240	213	143	205	211	249	[5] 104
October	212	163	403	231	208	155	170	206	243	[5] 102
November	215	159	375	224	207	149	226	208	239	100
December	219	170	415	214	212	151	206	208	236	98

[1] Federal Reserve Board represents output of mining and manufacturing; monthly data adjusted for seasonal variation.
[2] Computed from data furnished by Bureau of Labor Statistics and Interstate Commerce Commission on pay rolls in mining, manufacturing, and transportation; monthly data adjusted for seasonal variation. Revised August 1948. [3] Bureau of Labor Statistics. [4] Monthly data adjusted for seasonal variation. [5] Revised.
[6] Preliminary. [7] Ratio of prices received to prices paid for commodities, interest and taxes. [8] 1924 only.

Outlook Highlights

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spring. Consequently the hog-corn ratio probably will be lower than in recent months.

Milk Output Turns Upward

The seasonal decline in milk production from June 1949 to the low point of early December was less than usual; chiefly because output per cow was off less than usual. From now until the flush period next spring, output will turn upward.

Average prices for milk received by farmers in mid-December, were 101 percent of parity and 56 cents lower than a year earlier.

Smaller Wheat Trade Seen

With the supply position of importing countries improved, less wheat is expected to move into international trade in 1949–50 than in 1948–49. United States exports are now expected to total about 100 million bushels less than the 501 million bushels of 1949. Around 450 million are expected to be shipped abroad by Canada, Australia, and Argentina. Other exporting nations, including Soviet Russia, probably will export from 50 to 75 million.

In 1948–49, exports of grain and products from the United States were not only the largest in our history but also larger than those of any other country in a single year. ECA and military funds financed much of it.

Wheat Consumption Down Again

The downtrend in the use of wheat for food in this country continued in 1948–49. In the 12 months, civilians consumed 137 pounds of flour per person compared with 140 pounds in 1947–48 and 152 pounds in 1935–39. Consumption of wheat in breakfast food held up considerably better, dropping only one-tenth of a pound from the 1935–39 average of 3.4 pounds per person.

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